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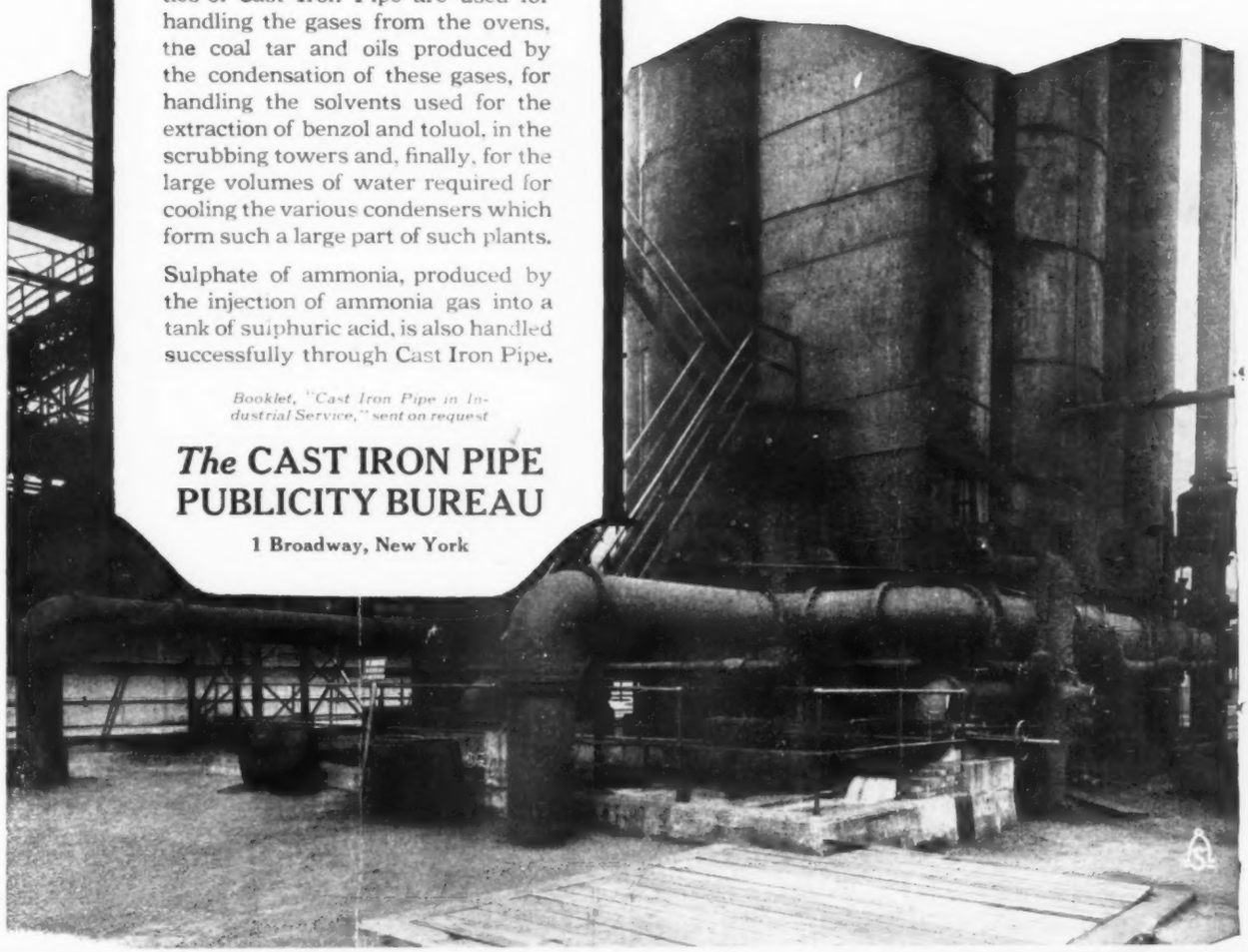

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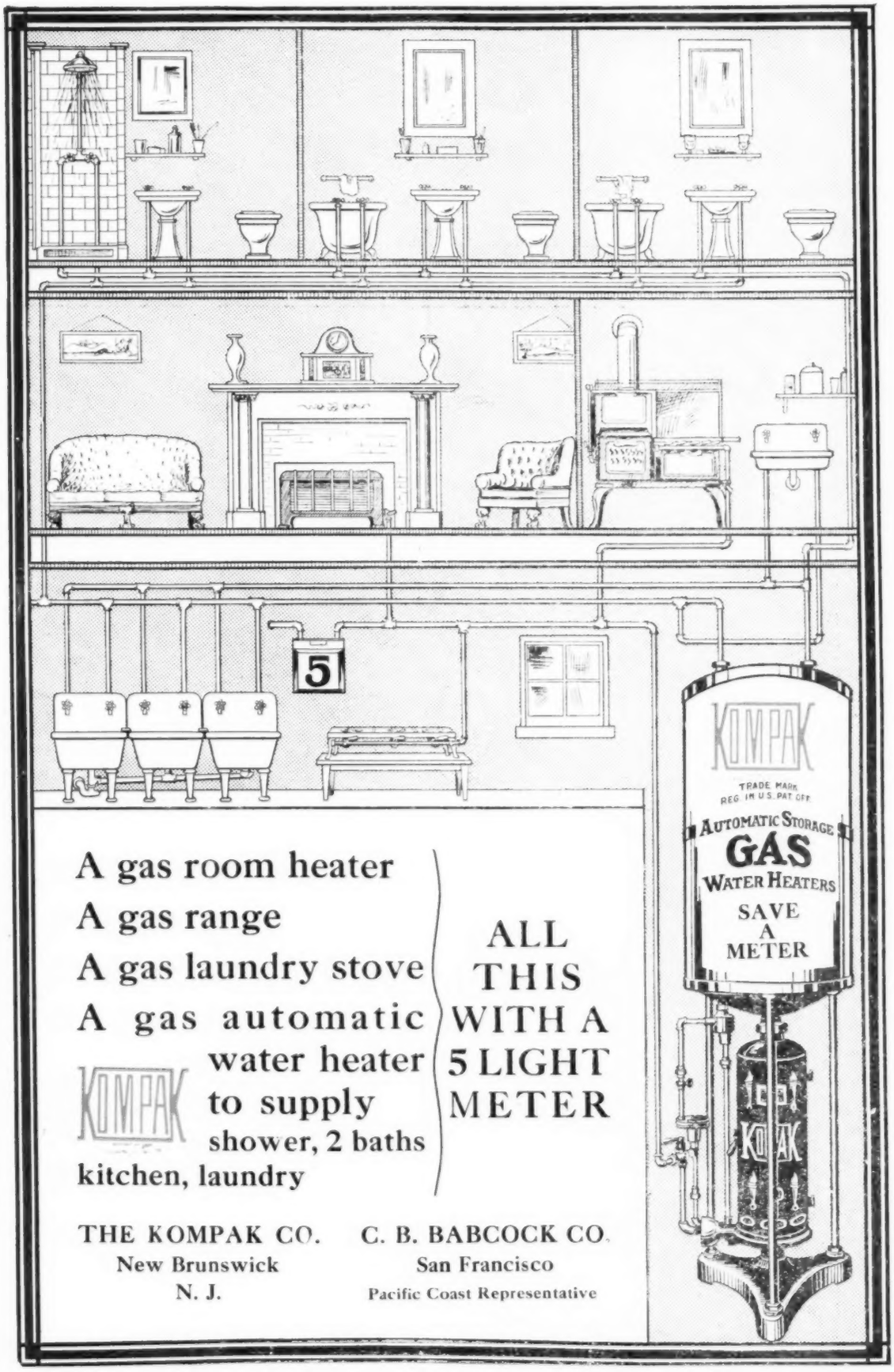

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A Review of the Progress of the Oil Shale Industry in 1920

A Year of No Spectacular Results but a Year in Which Substantial Progress Has Been Made

By VICTOR C. ALDERSON
President, Colorado School of Mines

The past year is one in which no spectacular results have been obtained in the oil shale industry, but a year in which substantial and far-reaching fundamental progress has been made. Effective legal progress has been made in securing valid title from the Government; extensive experimental work has been done on retorting; chemical investigation on the nature, properties, and behavior of oil shale has been carried on; the problems of refining shale oil have been taken up by oil refiners and chemists and finally, large financial interests, especially the oil and mining, have recognized that the oil shale industry is worthy of their closest attention.

Title to Oil Shale Land

The passage of the oil land leasing bill clearly and definitely established the validity of oil shale claims initiated under the placer law; it also provided for the withdrawal from entry of all oil shale land not filed on before the passage of the act. By far the most important event in 1920, as far as the oil industry is concerned, was the issuance of a patent to oil shale land by the United States Government. This established a precedent to the effect that oil shale lands filed on under the placer law with annual assessment done according to law could be carried to patent. The first patent issued was to the Reed-Doyle interests. The application of the Colorado Carbon Company is now pending. Others may be expected to follow rapidly, as it is unlikely that large financial interests will invest in the erection of plants until they are assured of a good title to their land. The bill extending the time until July 1, 1921, in which assessment work for 1920 could be done, was a boon to land owners who were overextended; it also prevented the reversion of much land to the Government that can now be held by the locators. There remains, however, many causes of friction and petty annoyances, like the character of the assessment work that will be accepted by the Government and at the same time be a direct development of the land, the frequent unfriendly attitude of local representatives of the Land Office, and the ineptitude of Washington officials to understand local conditions.

Scotland

The oil shale industry in Scotland has been in commercial operation since 1850. Twenty-one seams of shale have been worked, more or less. They vary greatly in their yield, are folded, faulted, expand, pinch out, and are, in general, exceedingly irregular. The earliest worked body, torbanite, was the richest. As depth is reached, the oil yield diminishes, but the nitrogen content, and consequently the ammonium sulphate yield, increases. The average yield is now twenty imperial gallons and forty pounds of ammonium sulphate to the ton. Mining is done entirely by hand at depths varying from 600 to 1,600 ft. Gas explosions, fires and accidents are rare. The Scottish Oils Company, Ltd., a $20,000,000 corporation, has absorbed all the individual operating companies and controls the entire industry. Scottish Oils is controlled by the Anglo-Persian Oil Company, Ltd., which in turn is controlled by the British Government. The Scottish company has 5,000 employees and produces more than 3,000,000 tons of shale a year to the value of $8,000,000. The average profit is approximately two shillings (50 cents) a ton. The Pumpherston plant—now a subsidiary of Scottish Oils— has paid 6 per cent dividends on its preferred stock regularly for many years. Its common stock paid 10 per cent in 1915; 25 per cent in 1916; 40 per cent in 1917, 1918 and 1919, and 30 per cent in 1920. On February 10, 1920, Scottish Oils paid its first semi-annual dividend of 3½ per cent on its preferred stock.

The Scotch retort is a vertical two-chambered retort in which oil is produced in the upper and ammonia in the lower chamber. It is not adapted, without modifications, to most American shales. The only known American deposits to which it is adapted, and there with modifications, is the oil shale deposit at Clay City, Ky.

The question is often asked: Why is a process that has been so successful in Scotland for more than half a

century not immediately adapted to foreign shales? The answer may be given as follows:

(a) Oil shale is not uniform in character, content, or chemical composition. There is a greater variation in different American deposits than between a typical American and a typical Scotch shale.

(b) The industry in Scotland is in a strategic position, economically. No well petroleum is produced either in England or Scotland. It is all imported. Consequently, the price of petroleum and all its products are abnormally high. Add to this the natural consumption of a large local population and the economic condition becomes very advantageous.

(c) In Scotland the primary product sought is not oil but ammonium sulphate, and the retorts are so constructed and operated as to obtain the maximum amount of ammonium sulphate from the nitrogen in the shale. Most American shales contain comparatively little nitrogen and the primary object of retorting is oil—not ammonium sulphate. The Scotch type of retort, therefore, is not immediately applicable and numerous inventors are experimenting to produce some other form that will be adapted to average American shales.

(d) To produce ammonium sulphate 100 gal. of water, in the form of steam, are required. Unless an ample supply of water is available the Scotch retort would be useless no matter what the nature of the shale might be. In the semi-arid regions of the West a lack of water is a noted characteristic.

In Scotland the problem is primarily not technical but economic; i. e., the cost of supplies, cost of labor, a good market, high selling prices, and a general low cost of production so as to leave a satisfactory margin between the cost of production and the selling price.

England

The oil shale deposits in England are extensive. They have been determined in many places from Dorsetshire to Norfolk but they are best exposed in Norfolk County, five miles south of King's Lynn, and on the English Channel. Here they form a distinctive feature of the English cliffs near the village of Kimmeridge from which the formation derives its name. Both these deposits, unfortunately, contain from 5 to 8 per cent or more of sulphur. This makes the resultant oil objectionable and unsalable. To remove this sulphur, and not destroy the oil, is the serious technical problem before the English scientist. Until that is solved the English oil shale deposits will remain non-commercial. The ablest English chemists are seeking to solve the difficulty but as yet no solution has been found. In retorting, the most notable results have been made on the N. M. G. retort.

Liberal support has been given to the appeal of the Birmingham University, England, for funds wherewith to continue to carry on its work in connection with the training of students in oil technology. Among the largest donations are: Anglo-Persian Oil Company, Ltd., £25,000; Lord Cowdray, £25,000; Anglo-Saxon Petroleum Company, £25,000; D. E. Alves, £12,500; Anglo-American Oil Company, Ltd., £10,000; making a total of £122,500 or $612,500. This speaks volumes for the substantial interest in, and appreciation of, the importance of the oil industry to the economic status of the British Empire.

France

Oil shales occur in Autun, Allier, the Midi, the Central plateau, and in the Vandee. At Autun there are ten seams of which four have been worked; the average yield is eighteen gallons of oil and from twenty-five to thirty pounds of ammonium sulphate; the average thickness of the seams is five feet; the dip 30 deg.; the ground is badly faulted. Improvements consist of a vertical shaft 500 ft. deep with drifts following the vein to a depth of 1,000 ft. The Scotch method is followed. At Beauxiere les Mines, in the province of Allier, the deposits are similar to those at Autun, but of a lower grade. The Var Coal & Oil Company, in the south of France, is doing experimental work under the direction of Dr. H. V. Dunham of New York and expects to install retorts and develop its oil shale deposits in the near future.

Other Foreign Countries

In Norway oil shale deposits are found on the island of Auden, in the northern part of Norway, where they are closely connected with coal deposits and also at King's Bay on the island of Spitzbergen. In Chile extensive deposits are reported in the province of Aranco, in the Andes Mountains. New companies have been formed to treat the oil shales in Tasmania as well as in the Transvaal. Argentina contains extensive beds of commercial rich shales which are being studied by an American mining engineer, Lyman Chatfield.

In Esthonia, a new State of old Russia, on the Gulf of Finland, the most valuable resource is the extensive oil shale deposits. These extend over an area five miles wide and forty miles long along the coast line of the Gulf of Finland; also on the railroad line between Johwi and Rakwere. The immediately available supply of oil shale is estimated by the Esthonian Government at 1,500,000,000 tons; Government analysis gives volatile matter 70.06 per cent; coke 11.08 per cent; ash, 18.86 per cent; total 100 per cent. The use of oil shale as raw fuel is common and is increasing. The Ministry of Commerce sells several thousand poods (a pood equals thirty-six pounds) a day. Not only is oil shale used as a domestic fuel but factories and other large industrial concerns are adopting it as a permanent fuel. An English company is erecting a complete plant for the production of crude oil and expects to have it in operation early in 1921.

In Canada the most important activity is in New Brunswick where the D'Arcy Exploration Company, a subsidiary of the Anglo-Persian Oil Company of London, is erecting near Moncton a full sized retorting plant of the Wallace type, to be finished by March 1. The retorts will be made of silica instead of iron. An appropriation of $6,250,000 has been made for the work. It is to be regretted that large financial interests in the United States do not support the industry in the same liberal manner. The Acadia Oil & Shale Company, Ltd., of College Bridge, New Brunswick, has been incorporated recently and will develop the deposits in Albert and Westmoreland Counties. The New Brunswick shales have long been known and have been tested on a commercial scale by the late Sir Boverton Redwood who reported a yield of thirty-three gallons of oil and sixty pounds of ammonium sulphate. Matthew Lodge of Moncton has for many years been an advocate of the development of the New Brunswick shales. His hopes bid fair to be realized in 1921. In the province

of Saskatchewan 200 leases on oil shale land covering an area of 130,944.81 acres have been issued. The oil shale deposits of the Pasquia hills are reported to be of commercial value both in oil and ammonium sulphate. Along the valleys of the Matagami, Moose, and Abitibi Rivers, in northern Canada, the discovery of oil shales in commercial quantities is announced by the Canadian Government. Shale from the Abitibi River gave 87.36 gal. of oil to the ton. Other samples yielded as much as 132.2 gal. to the ton. Samples of shale from Newport Islands, county of Gaspe, Quebec, submitted by R. E. Lenthal, were tested at the Colorado School of Mines and yielded 22.24 and 51.5 gal. of oil to the ton.

In Tasmania the Anglo-Persian Oil Company, Ltd., is investigating the oil shale deposits at Latrobe in connection with the Government. Efforts to buy out the local company, that has been operating in a small way, have failed. Dr. Arthur Wade, a British technologist, reports that the seams are well defined and vary from five to seven feet in thickness, and that it would take 100 years to exhaust the deposit.

In Australia the deposits at Newnes have been known and worked for many years, but the results of the Commonwealth Oil Corporation were disastrous and a receiver appointed. John Fell has revived the company, installed new retorts, and put the company on a commercial basis. The trouble seems to have been not a supply of shale nor a method of treatment, but inability to secure labor of the proper type. These troubles are now over and success for 1921 seems assured. A new mine with eight working faces has recently been opened. The shale averages eighty gallons to the ton. During the year ending June 30, 1920, the company received $81,460 as bounty on oil produced.

The resources of Brazil are notable for the absence of coal and petroleum yet oil shale is found in abundance in several places, especially along the coast from the Amazon River on the north nearly to Rio de Janeiro on the south. The deposit is exposed at intervals throughout this entire distance but is particularly well exposed for a distance of 400 miles in the State of Allagoas where it is known to extend for two miles back of the outcrop. Near Maceo, in Allagoas, experimental work on retorting is now being done. The late Sir Boverton Redwood reported this shale to yield 44.73 gal. of oil to the ton. With little or no coal or petroleum Brazil naturally looks to oil shale as a valuable natural resource. The rapid development of the oil shale industry in Brazil, therefore, may be confidently expected.

United States

Little has been published about the oil shale deposits of California yet they are extensive and valuable. It is reported that in Kern County an area of twenty-five square miles have been sampled and found to yield an average of fifty-two gallons of oil to the ton. At Elsinore, near Riverside, test pits show fifteen feet of shale which yield from fifty-eight to sixty-two gallons of oil. At the Shuman cut on the Southern Pacific, three miles north of Casmalia and ten miles from Santa Maria, a 250-ft. face of oil shale is exposed on the west side of the cut. On the east side a hill 900 ft. high is virtually all shale with a small overburden of soil. On the eastern edge of this hill an oil well sunk to 2,000 ft. showed a continuous body of oil shale. The deposit has been sampled from surface exposures and by drill holes and shows an average from 30 to 35 gal. of oil to the ton. A sample tested at the Colorado School of Mines gave 32 gal. The economic advantages of this deposit —cheap open cut mining, nearness to transportation, and to market—gives it a distinct advantage as a commercial project. The United States Producers Refining Company owns 1,000 acres of this ground. The president, E. W. Hartman, has designed a retort, the first fifty-ton unit of which is now being installed and is

(*Continued on page* 79.)

The Conservation of Fuel as It Affects the Gas Industry

Tremendous Water Power Developments that Are Planned Need Not Worry Gas Man

By J. E. BULLARD

Will the tremendous water power developments that are being contemplated in the United States spell the death knell to the gas business? It would seem that there are some people who almost believe that should all these power plants and transmission lines be built that they would mean disaster to the gas business. The actual facts in the case, however, do not bear out this fear.

Up to 1820 practically all of the fuel used in this country was used for cooking food and keeping warm. At that time the power used for manufacturing, the power for the grist-mill, the sawmill, cotton mills, woolen mills and forge was derived from water power. When we estimate water power development in terms of percentage of power requirements, our water resources were then developed to a greater extent than we can ever hope to have them developed again. They were supplying all the power requirements.

With the advent of the steam engine, however, and the introduction of machine methods in all lines of manufacture the demand for fuel increased to a very remarkable extent. Steam was frequently cheaper than water power and it did not have the disadvantages of water power so it more and more displaced this old form of power.

The destruction of our forests soon eliminated wood as a fuel. We have already forgotten that some of the first locomotives were wood burners and that some of our ancestors never burned a ton of coal during their lifetimes. Up to 1840 the total amount of coal that had been mined in the United States did not amount to more

than twelve million tons. In fact, as late as 1880 only about a billion tons had been taken from our mines.

Since then the drain upon our mines has become greater and greater, but of even greater importance than this has been the problem of transporting the coal to the consumer. The increased production that machinery has made possible has in itself placed a rather serious burden upon the railroads. Added to this has been the increased tonnage of coal that it has been necessary to transport.

An idea of how the consumption of coal has been increasing may be gained from the fact that fifty years ago the consumption of coal per capita in this country was only 0.96 ton, while to-day it is slightly over six tons. If the consumption of coal increases at the same rate during the next fifty years that it has during the past and our population also increases at the same rate there will be consumed in this country more than six and a half billion tons of coal in 1970. The difficulty that is now being experienced in getting coal deliveries will give some idea of how difficult it would be to handle this huge quantity of coal. It may be stated that the total production of coal, both anthracite and bituminous for the year 1920 is estimated to be not far from six hundred million tons.

The machine era has also made new demands upon liquid fuel. The close to twelve million motor vehicles in use in the United States are making heavy inroads into our oil supplies. Added to this are the steamships, locomotive and internal combustion engines of the stationary type which use petroleum or some petroleum product as fuel.

Fuel Must Be Conserved

No matter how rapidly the water power sites are developed it will still be necessary to conserve our fuel supply. One of the most promising ways of doing this is through the distillation of fuels. In other words, of doing exactly the same work that the gas companies are now doing.

At the present time some 12 per cent of all the fuel used is burned for domestic heating and cooking. A great saving to the country would result if all the cooking was done with gas and all the heating with either gas or electricity. In fact, as time goes on there is bound to be a greater tendency in this direction.

The demand for the by-products of the distillation of coal, especially for those such as benzol, which may be used as fuel for internal combustion engines is steadily increasing. There is certainty that this will continue to increase as time goes on.

The public service commissions and other law-making bodies are coming more and more to realize the necessity of fixing gas standards in such a manner that the most economical methods of coal distillation may be used. The candlepower requirements and high-heat standards have suffered a greater blow during the past six years than ever before. The high cost of fuel is making it more and more important that the greatest number of heat units be delivered at the lowest possible cost.

During the past ten years a great deal of research and experimental work has been done in an effort to find better ways of burning coal and to get better results. The use of powdered coal has been made practical. The possibilities of using coal that has previously been wasted have been carefully investigated.

The tendency now seems to be decidedly away from the old methods of burning coal. More and more importance is being placed upon the distillation of coal before it is burned or of burning it in powdered form so that every particle of the coal is actually burned and no considerable percentage is left in the ash.

The use of powdered coal, however, requires a large plant. It cannot be burned satisfactorily in small ones because of the auxiliary equipment that is needed. For this reason, there will be a very great demand for the products of distilled coal, gas, coke, benzol and all the other products.

Our anthracite coal is now a very small percentage of the total amount of coal produced. This percentage will become less instead of greater and we will need some substitute for it such as gas and coke. People will not willingly use the dirty and smoky bituminous coal in their homes, but they will use the products of the distillation of this coal—coke and gas.

To-day, machine methods are being adopted in every industry. On the farm machinery is being used to a greater extent than ever before. Less and less work is being done by hand. The modern housewife sweeps her floors, washes her clothes, and perhaps her dishes by machinery. All of this is causing a greater and greater demand for power. Machinery makes it possible for each person to produce hundreds of times more than he could produce by hand labor. This means that all of us can enjoy more luxuries than would otherwise be enjoyed. Power is required to produce these luxuries.

In the past there has seemed to be an unlimited supply of fuel. It was cheap and easily obtained. Therefore, it was wasted. People did not burn gas in the kitchen because they had become accustomed to coal and thought it cheaper. Now the price of coal is going up and it is becoming harder and harder to get it. Besides people are coming more and more to look for easier and quicker ways to do things. This, to a certain extent, is already having its effect by making it easier to install all-gas kitchens. It will make it still easier in the future.

Though the manufacturer may make a greater and greater use of electricity, he will still be in the market for gas if that serves its purpose as well and is as economical. The modern business man is paying a great deal more attention to costs than did the business man of fifty years ago. Competition is greater, overhead is much higher, and labor is not so easily secured or satisfied with the working conditions, hours and wages that proved satisfactory no longer than ten years ago. In the past, sentiment went a long way in selling either gas or electricity. In the future dollars and cents will count to a greater degree. The successful salesman of gas for industrial purposes will have to be a man who will be able to talk dollars and cents.

The movements towards water power developments need not worry any gas man. It is merely a by-product of a condition that is extremely favorable to the gas industry. The present condition of our fuel supply is going to attract more attention to the gas industry than that industry has ever before enjoyed. It is bound to give to the gas man opportunities far greater than any that have ever before been offered to him. The gas industry is more closely related to the conservation of our fuel resources than is any other single industry in the country for the reason that it touches this conservation problem in so many different ways.

Utilities Must Be Frank with Public Indiana Association Is Told

Speakers Emphasize Need of Truth in Talks Before Indiana Public Utility Association

Emphasis on frankness in dealing with utility problems before respective publics, which utilities serve, was the keynote of the addresses at the annual meeting of the Indiana Public Utility Association, held at the Claypool Hotel in Indianapolis Thursday, Jan. 13. Many prominent speakers addressed a gathering of approximately 300 utility experts, in the gas, electric, water and traction fields. Speakers included Paul P. Haynes, member of the Public Service Commission of Indiana, Philip H. Gadsden, of Philadelphia, president of the American Electric Railway Association; Martin J. Insull, of the Commonwealth-Edison Company, of Chicago, and president of the National Electric Light Association; Charles A. Monroe, president of the American Gas Association, of Chicago; E. K. Hall, of New York, vice-president, American Telephone & Telegraph Company, and others.

Officers of the Indiana organization were elected as follows: President, Charles L. Henry, Indianapolis; vice-presidents: T. J. Haas, of Evansville and S. E. Milholland, of Fort Wayne; secretary, M. V. Robb, of Clinton; treasurer, Charles C. Perry, of Indianapolis; members of executive committee, C. L. Kirk, Harry Reid and Frank Wampler, of Indianapolis, Thomas Donohue and Frank O. Cuppy, of Lafayette, Fred A. Bryan, of South Bend.

Mr. Monroe's talk was brief. He discussed "To-day's Utility Problems" and emphasized that as soon as the public can be convinced that its own prosperity depends in a very large measure on the prosperity of its utility properties, just that soon can utility properties hope to obtain adequate returns from public channels of utility regulation. He pointed out that the majority of business men seem not to realize that the public utility can be satisfied with a reasonable return of 8 per cent, on the value of its property and that, consequently, suspicion of requests for higher rates by utilities, no matter under what operating conditions, always is widespread.

Meeting Attracted Wide Attention

The meeting attracted attention of the press throughout Indiana and adjoining States and much editorial comment appeared after the meeting, with regard to the various new viewpoints expressed by utility men at the meeting. Mr. Gadsden's address urged utility men everywhere to "be frank and advertise." Only by such methods can public understanding of utility problems be obtained, he urged, and until such public understanding is available all of the old opposition to proper rate adjustment and consequent possible credit restoration will continue.

"It is absolutely necessary," he said, "if public utilities are to continue to function that they create a flow of new capital into their securities. The answer to this whole problem is the granting of rates to public utility companies which will insure a return to the security holders that will induce them to invest. Nothing less than this sort of an arrangement will save the utilities from ruin.

"Adjustment of public utility rates to a basis that will attract new money into the field will be hastened by a thorough public understanding of the public utility's problems.

"The best way to bring about that understanding is to be frank and advertise.

Public Entitled to Full Knowledge

"Frankness must go hand in hand with advertising else advertising fails. Therefore, be prepared, when you begin presenting your story to the public, to tell the whole truth about your business to everyone. As the only customer of the public utilities, the public is entitled to know all about their business and any public utility which cannot stand the searchlight of honest public inquiry cannot hope to obtain help through favorable public sentiment. Put your house in such order that you will fear the questions of no man.

"Advertise by every possible channel and hit the line hard. Tell your story in electric railway car cards, in the display advertising columns of the daily newspapers, through your employees—tell it everywhere that there is blank space which you can fill.

"Present your facts simply, frankly and honestly. Make it plain that the public utility problem is the problem of every man, woman and child who uses your service. Strive by frank statement to convince consumers that you are trying to do the best thing for their general good and that it is in their own interest, if nothing else, that they should enlist themselves in your cause. The way to accomplish this result is not to make the mere statement that it is your intention to give good service, or to submit to the public a large indigestible volume of statistics and then sit down and wait for the millennium. The thing to do is to explain your situation in understandable terms to just as many folks as possible. If you have a good case, as most public utilities nowadays have, and you will tell the whole truth about your situation in a simple and convincing manner and give it deserving circulation through the best available advertising medium you are certain to rally the public to your support.

"Every man desires good electric railway, gas, light, telephone and telegraph service, and he will help you give it to him if you can show him that his help is needed to accomplish this very desirable end. And I know that you can do this if you will just tell him the simple facts of the situation that obtain to-day in every public utility."

Following somewhat the same lines of emphasis that characterized Mr. Gadsden's remarks, Commissioner Haynes declared that $100,000,000 should be expended by Indiana utilities within the next two years "in order to give to the public the services that are vitally necessary to the industrial welfare, health, comfort and conveniences of the people generally."

"Service First" Should Be Watchword

"Service first," Mr. Haynes said, "should be the watchword of every public service company. Service is the primary obligation of all utilities. Public service commissions cannot do their part unless the utility does its part. Public confidence in utility corporations must be restored. The restoration of confidence in large measure will depend on the establishment of proper public relations, open and aboveboard practices by the utility, and most important of all good services."

His address was as follows:

"For more than four years public service companies have felt the ever-growing burden of increased costs. At the time of the armistice in 1918 most of us believed that within a few months a recession of prices would set in which would relieve the critical financial situation which affected practically every utility in the country. It was a vain hope, for not only did prices refuse to come down, but they continued to mount to unprecedented levels. Utility credits were further impaired, and the financial structure of the great agencies of public service continued to be further weakened as a result of post-war conditions.

"There were few, if any, war profiteers among utility companies. The excess profit tax is not one of the public utility problems. The increases in utility rates lagged far behind the enormous increases of commodities generally. Due to strict regulation and the hope on the part of regulatory bodies that conditions were temporary, and the fact that the charge for utility services was generally based upon past performance rather than anticipated requirements, the increases granted by commissions during the war period maintained the solvency of these enterprises but did not keep them in a healthy financial credit condition which the public welfare demands.

"While private, unregulated industrial enterprises were enjoying unprecedented prosperity, while dividends ranging from 25 to 100 per cent and more were being declared by non-utility companies, utilities, under rigid regulation, were extremely fortunate if they were able to complete a year with a net earning of 6 or 7 per cent on the fair value of their property. Many fell below this with the result that they have been unable to command credit—money to meet the public's demand for good service and extensions and betterments.

"We have now reached the turning point. Prices are beginning to decline. However welcome this fact may be as a promise of relief to the general public through reduced prices of necessary commodities, it bids fair, unless properly understood, to react on utility companies in a most harmful way.

"Even now commissions hear a demand for the immediate or early reduction of rates. With few exceptions, these demands are made by honest and sincere individuals who are actuated by the best of motives, but who lack information. A danger lies in the development of a liberal demand for wholesale reduction of rates which rests its case upon a present downward trend of commodity prices. There will be readjustments to meet changing conditions, but they must be made thoughtfully and with a due regard for the economic welfare.

"There are several vitally important facts which should be generally recognized in order that justice be done.

"First, the average increase in utility rates during the past four years was substantially less than the average increase in the prices of the necessities of life.

Have Earned Less Than Fair Return

"Second, during the past four years most utilities have earned less than a fair return upon their invested capital, and equity would seem to require that during the next few years of down-grade prices utility companies should be permitted to recoup reasonable losses suffered in the period of up-grade prices.

"Third, utility rates were not, and are not now, based on the peak of war and post-war operating costs and therefore a considerable reduction in commodity prices can occur before the average of prices generally reaches the point on which utility rates, generally speaking, are now based.

"Fourth, there have been millions of dollars of deferred maintenance during the past four years which must now be taken care of.

"Fifth, $100,000,000 should be expended for additions and improvements in the next two years by the utilities of Indiana in order to give the public services which are vitally necessary to the industrial welfare, health, comfort and convenience of the people generally. The public should know that these vast sums cannot be obtained unless the financial showings of utilities are such as to attract it in a market in which all the world is bidding for money.

"Sixth, the credit of utilities has been impaired, and this vast sum of money cannot be raised and the public cannot be served unless the credit of public utility enterprises generally is improved through the medium of adequate revenues.

"Seventh, the welfare of the State and the country calls for a broad and sympathetic understanding of these important facts which should be of basic importance in the formation of regulatory policies.

Utility Must Be Kept Prosperous

"At this point I desire to emphasize what I have said elsewhere, that it is not only the duty of regulatory bodies to maintain the solvency of utility enterprises, fairly capitalized, but it is their bounden duty to the public welfare to see to it that the utilities which they regulate are not only solvent but are healthy and profitable. It is not enough merely to let a utility exist, but it should have a compensation which will reflect itself in prosperous operation, good financial credit, healthy growth and good service.

"Furthermore, the utility that renders the best service and shows a deeper regard for its obligations as an agency of the public service, should be liberally rewarded, just as the utility that renders poor service and has little regard for its public obligations should be restricted in its reward.

"Public service commissions understand their responsibilities and have the courage to do their part in maintaining the economic well-being of the nation. They understand, perhaps more than others, the real need for a deeper understanding and appreciation of the copartnership which exists between utility enterprises and the public, and they realize their impotency to act when the public service corporations inexcusably fail in their obligation adequately to serve.

Service Is Primary Obligation

"Service is the primary obligation of all utilities. Public service commissions cannot do their part unless the utility does its part. Public confidence in utility corporations must be restored. The restoration of confidence, in large measure, will depend on the establishment of proper public relations—open and aboveboard practices by the utility and, most important of all, good service. Commissions observe that the utility that convinces the public that it is honestly and conscientiously striving to give the best service possible and is frank and open in its public relations will find, in most instances, a liberal response on the part of the public. 'Service first' must be the watchword of every public service company.

"If, due to conditions beyond the control of the company, it is unable to give adequate service, still the public will respond liberally if it has been taught to know that the company is honestly and conscientiously doing everything within its power to give the best possible service. This is not an idealistic or academic conclusion, for I have personal knowledge of many instances where the public has responded without stint when it was taught to know that the utility was diligently striving to be a real public servant."

Charles L. Henry, president of the Indiana Association, presided at the meeting and Mayor Charles W. Jewett, of Indianapolis, gave an address of welcome. Several of the speeches were delivered at the evening dinner, held in the James Whitcomb Riley Room of the hotel.

Address on "Public Relations"

The address of E. K. Hall, of New York, on "Public Relations" was one of the interesting talks. The problem of the public utility and the community it serves is not understood, he argued, and largely this is historical. When the public utilities were launched, he pointed out, all in the life of the present generation, their operation proved largely an experiment, and very naturally many mistakes were made.

Some companies, the speaker continued, used methods that were ill-advised and some even were unfair to their patrons, while some were discriminatory in rates and service. The company officials all were so busy building up their plants that they failed to take the time to consider the necessity of safeguarding their relations with the public.

"The Woolworth Building is built up around elevator service," he pointed out. "Without this service it would be nothing but a monument. Our modern industries are built up around the public utilities, but this relationship never has been clearly understood."

The attitude of some companies, the speaker continued, has resulted in the creation of a hostile or defensive attitude on the part of the public, and this developed into the sole purpose of preventing increase in rates, and, if possible, to lower them. When the war era came on and the cost of labor and materials mounted steadily, the people did not consider the necessity of insuring the solvency of their public utilities or of regulating them to safeguard the efficiency of the service rendered.

"Regulation has now reached the second period," he said. "After spanking all utilities, both good and bad, co-operation is necessary in the interests of the public itself. The utilities, on the other hand, must educate the people." The speaker enumerated several vital facts in connection with the relation existing between the public utility and the public:

That the interests of the public and the public utilities are identical.

That the public utility is different from the ordinary corporation in that it earns no profits as such, but only seeks a fair return on the investment.

There is no danger of a rate becoming too high from the public's point of view, for regulation always is possible, but the real danger is that rates will become too low, permanently crippling the company and also injuring its service to the community.

If the public utilities are to grow as rapidly as the community desires, service must be maintained and the company must have sound credit to obtain capital when needed. To get capital it must enjoy a fair rate and also a sufficient margin, for no one will lend money to a corporation which barely manages to break even.

Utility Has Nothing to Fear from Public

"The utility has nothing to fear from the public," concluded Mr. Hall, "if it will only present the facts of the case. The public is at least 90 per cent fair and it will not permit its servants to be crippled if it is properly advised of their condition. The public utilities should tell the truth at all times and should tell it soon enough to obtain relief before their condition becomes desperate."

In Mr. Insull's address he carried much the same theme that had dominated the remainder of the meeting.

Frankness in laying the facts before the people will prove the salvation of the public utilities, he said he believed. His subject was "Public Utilities the People's Business."

The average person, he asserted, seldom thinks of the public utility until through reasons over which the companies have no control, service deteriorates and need arises for an increase in rates. The individual should be made to appreciate the chaotic conditions which would arise from the shutdown of one or more of the great services, such as transportation, communication, light, power, heat and water. He pointed out the dependence upon these utilities in business and social life. Mr. Insull showed that early ideas of regulation were based upon competition, but that this attitude proved a mistake, and that the various utility services were recognized as natural monopolies. Although a monopoly, however, he contended, the company must enter a great competitive field when it goes into the market for money. To get the money it must show a reasonable earning power, which is a factor dependent practically entirely upon the award of fair rates.

Public Attitude Reflected in Press

The public press, during and following the time of the big utility meeting in Indiana, showed how definitely the new public understanding of utility problems is becoming assured. An editorial in the Indianapolis *Star*, entitled "Fair Play for Public Utilities," emphasized many of the points brought out at the meeting, as follows:

"Improvement in service and in the relations existing between the public utilities and the public will not be

(*Continued on page* 81.)

Although Attacking Service Charge, Committee Recommends Minimum Bill

Stamford (Conn.) Civic Body Gets Lost When Attempting to Analyze Subject It Apparently Does Not Understand

Because it shows clearly the lack of knowledge that the public has regarding the gas industry the following report made to the president of the Stamford (Conn.) Chamber of Commerce is published in full in these columns. The report is the result of a so-called investigation made by a "service charge committee" in connection with gas rates.

Particular attention is called to the proposed provision of the law regulating gas companies in that State for it proposes just exactly what the rest of the report condemns. The attacks on the political "influence" of the gas companies, which, as is usual in such cases, are referred to as "corporations," need not be regarded as serious in any way, as they are the outbursts that are ordinary when a subject such as this is handled by a biased and unfair committee.

The report, which was published in the Stamford *Advocate*, in a prominent position, is as follows:

The Report in Full

There is a nationwide organization of gas companies, known as the American Gas Association, the president of which is Charles A. Munroe, who was elected at the second annual convention, held last fall. At the previous convention Mr. Munroe had spoken in part as follows: "We should first make a determined effort to devise ways and means of bringing down the cost of production, and after that our energy should be exerted for increasing our gross revenue through the addition of a minimum number of customers. We should make no effort to secure additional meters, even on existing mains, unless we are satisfied that the new consumer is going to pay in excess of $24 per annum. Try as hard as we may to avoid such customers, there will be a sufficient number coming to us whom we shall be obliged to take care of in due course. We are suffering from having too large a number of unprofitable customers. The customers that the gas company wants are the customers who pay a large monthly bill through a single service, and who give the largest volume of a single service, and who give the largest colume of gross business through the minimum of capital expenditure.

On the title page of each volume of the convention reports, copies of which were presumably furnished to all the members of the association, the reader is warned that, for statements and opinions contained in papers and discussions therein, the association does not hold itself responsible. Yet how can the association avoid responsibility for the views of Mr. Munroe, considering that the members first learned where he stood and then proceeded at the first opportunity to make him their leader?

While Mr. Munroe apparently exhibited the greatest dislike for the small consumer, in fact for domestic consumers in general, it is worth noting that another speaker at the same convention recommended the adoption of charging systems "which will eliminate all undesirable consumers." Still another said: "The aim of gas companies should be the securing of large individual consumers, mainly of an industrial nature, because such consumer offers the most profitable return on the investment."

In looking over the reports nothing is more certain to catch the eye than the expression "Readiness to serve," printed in capital letters each time it was used by a certain speaker. It seems unlikely that many managers of gas companies missed it; yet the explanation would probably be that the capitals appeared in the speaker's manuscript and that he alone was responsible.

During the past few years, while public attention has been diverted, the gas companies have met with remarkable success in their dealings with the utility commissions of the various States, and it would seem a waste of time to petition a utility commission for relief from a gas-service charge. From investigation and from common public report, the conclusion is irresistible that many utility commissioners are as good as appointed by the very corporations they are supposed to regulate, dependent for reappointment and increase of salary on their good behavior from a corporation standpoint, and in danger of starving to death upon retirement unless their records are satisfactory to those same corporations. Generally speaking, any relief from a gas-service charge granted by a utility commision or as a company would probably be granted merely as a matter of temporary expediency to placate a rebellious community and avoid danger of legislative action.

While utility commissioners are not, as a class, qualified by education to pass upon questions of equity; yet, because of the broad authority granted them through the State legislatures, their decisions are likely to be upheld by the courts, the burden of proof being upon the petitioner. But an anti-service-charge law, limiting the power of the utility commission as Congress has limited the power of the Interstate Commerce Commission, would almost certainly be upheld by the State and Federal courts; and the following paragraph of a single sentence suggests a statutory provision which would prevent discrimination against any person who could show a reasonable need of service:

"All gas supplied the public by any corporation authorized to do business in this State shall be sold, service included, at a uniform rate; provided, however, that agreement by the consumer to a monthly minimum charge for 500 cu. ft. of gas may be required to establish the need of service."

Such a statutory provision would not only protect the small consumer in particular, and the domestic consumer in general; it would make rate juggling by gas companies and utility commissions impossible. Any halfway measure could probably be evaded; for example, to allow a sliding scale of rates would be to allow an indirect service charge.

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As the Journal Views It

A New Department

Beginning with this issue the AMERICAN GAS ENGINEERING JOURNAL offers a new department dealing with the quotations on the financial issues of the various companies. While this list is not complete in every offering of security that has been made throughout the United States, it is sufficiently general in character to indicate the interest that the general public takes in utility securities and the prices that they bring.

While this list is a modest beginning of what is hoped and expected to be an important branch of the activity of this journal, it may be taken as an indication of the wish to serve the industry in every particular. The information secured comes from an absolutely authentic source, and the JOURNAL will undertake to answer any questions dealing with the listed issues or with any other on receipt of inquiries. Suggestions and criticisms of the department are invited.

Utility Commission Hearings

Within a short time it is expected that there will be passed by the New York State Legislature a new law covering the Public Service Commission and embodying recommendations to be made by Governor Miller. It has been suggested that this new law, which it is expected will be the fairest one that utilities have yet operated under, contain a provision prohibiting a commissioner from hearing a case in his home community. This would mean that a commissioner hearing a case in Albany, for instance, would not be a resident of that city but would come from some other part of the State.

There are many arguments in favor of such provision from every standpoint, and it would serve to remove to a very large extent the political aspect of many decisions which at the present time have been the subject of comment.

This provision could safely be added to the public utility laws of every State in the Union and the effect would undoubtedly be noticeable at once.

Removing a man from the influences of his home town would automatically give his decision a judicial aspect and would be more nearly based on a correct interpretation of the law and not be guided by expediency. It is to be hoped that gas men generally will bring this matter to the attention of the law-makers.

Get Busy!

In visiting various sections of the country a traveler is impressed with the differing opinions that gas men hold regarding the immediate future of the business. As a rule, it must be admitted, company executives are optimistic and believe that we are entering a period of prosperity and growth. However, here and there can be found those who have dark forebodings as to what the future holds in store.

If anyone will take the time to make even a superficial investigation of conditions surrounding the gas field he cannot fail to be convinced that this is the time for us to push forward with all possible vigor. True enough, we are not prosperous and there are many bridges to cross before we can declare ourselves out of danger, but indications are that this period will come if we are willing to fight for it. Others with less at stake are fighting against the industry with tooth and nail, and it can be no crime for us to protect our property and the investment of hundreds of thousands of citizens by becoming just the least bit aggressive.

One indication that the industry is going to take its proper place is shown by the increased demand for gas service. Now, with each new service that is installed there is provided a market not only for gas but for gas-consuming appliances, and every gas company should be well supplied with seasonable merchandise right now. If a company is not, then it should go into the open market and contract for appliances and then push the sale of these appliances in every possible way. If companies do not care to do this, then arrangements should be made to provide outlets for these appliances through local dealers. But this business should be given impetus at the present time that will carry it along when the way is cleared, as it eventually is bound to be.

Information gathered in moving about the country and reports that are received from reliable correspondents indicate that scores of gas companies are prepared for this new business and are purchasing appliances; but this is not enough. Every company, no matter what its condition to-day, should get into the market now so that a solid front can be presented.

Attacking a Gas Company

Whenever a gas company and its affairs come up for discussion in a meeting of a civic body, it seems apparent that every member gets out his ax and prepares for a series of attacks. This, whether the company is deserving of them or not. It seems to have become a favorite amusement with a certain class of Americans to assail public utility corporations generally. Usually, it might be said in passing, it is almost a certain way of obtaining publicity.

Now, no gas man that we ever talked with objected to having his faults pointed out to him. In fact, most members of this industry are seeking honest criticism so that our most glaring faults can be remedied and the business generally brought to a higher standard. But, like every other human, we also desire that these criticisms be based on fact and that they be offered in a constructive vein. It is one of the easiest things in the world to tear down, but it takes time and real thought to build on a wreck.

A favorite method of criticising is to twist words and meanings, particularly when they are uttered by a prominent man. This seems to be the case of the report made by a committee to the Stamford Chamber of Commerce on the service charge. As showing that this charge is unwarranted and is only part of a plan of the industry at large to wax wealthy at the expense of its consumers, excerpts are quoted from speeches made by President Munroe of the American Gas Association. We are not disputing that these quotations are probably correct, but what we do say is that they should not be considered as separate statements but should be regarded as a part of the whole. If this is done, then a new meaning is given—the meaning that the speaker intended to convey—and the false light is removed.

Propaganda such as is outlined in the report, published in another section of this issue, is constantly going on and must be combated, but the only way that this can be done is for the industry to become active and to nail every charge that is brought against it. By industry is meant the men and women who compose the rank and file. Learn the truth about the gas field, and then spread it. It will soon remove the ground from under the feet of those who are seeking self-exploitation at our expense.

"No One at Home" When the Gas Man Called

How One Company Overcomes This Evil Which Everyone Experiences

By FELIX J. KOCH

Often, of course, it is accidental!

People, for one, cannot be expected to remember upon what afternoon toward the close of the fiscal month the meter reader for the gas company will make his usual call; nor, even should they remember, can they be expected to cancel all engagements and stay home to unlock the door for him.

So the meter man, the "gas man" he is called, almost always, comes; he cannot get into the house to read the meter; the company has no means for basing its monthly statement; the statement must be delayed. This delay, accidental—or, very often, there is a well-founded suspicion otherwise—is very convenient with many people not overburdened with surplus cash.

Gas companies, in fact, will tell you that they *know* that there are families who make a point of not opening the door to the meter reader's knock or ring, until the third or fourth visit for the stated period. Incredible as it may seem, there are families who have windows so arranged, peepholes in shades or curtains so arranged, that they may know absolutely who is at the door before opening it. These people make a point of staving off their gas bills—and probably many other bills—by this simple wise.

One such delinquent, two such delinquents, a dozen such delinquents, might not affect a great gas-lighting concern greatly; but when the number swells to what a big city affords now, it does become a serious matter indeed.

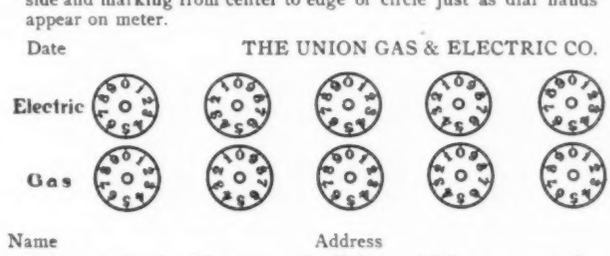
Men must be engaged to make second visits and often third and fourth trips; company books must be held open; files are not closed within the time desired for them; innumerable other vexing situations arise.

In Cincinnati they have just installed a simple expedient which is already providing a great deal of relief.

If the meter man calls at your home or office and finds all doors locked and receives no response to his knocks or the door bell, he slips beneath the door a United States postcard, with the address of the gas company's reading department printed across the face. All that is necessary, therefore, is that the recipient fill out the blanks on the rear and then drop this into the first mail box encountered.

On the rear of this card two rows of small, black circles—five to each—catch the eye instantly. At one side of the upper row the word "electric" is printed. Below it appears the word "gas"; the company supplying the community with its illuminating and heating gas and its electric service as well.

Starting with a zero at the top, and the numbers ranging from one to nine, the circumference of each circle encloses ten numerals; a small line joining each to the circle itself.


Owing to your absence we were unable to read your gas or electric meter. Will you co-operate with us to the extent of making the reading and mailing this card at your convenience? Mark as many circles below as meter has dials, beginning with dial on right side and marking from center to edge of circle just as dial hands appear on meter.
Date
THE UNION GAS & ELECTRIC CO.
Electric
Gas
Name
Address

Below this double row of disks, which are certain to take the eye of the recipient of the card at once, there are spaces for the householder's name and address. These spaces are filled in by the meter reader who leaves the card.

Half a dozen lines of clear, good-sized print just above the circles state the purpose of the postal, and give what remains to be told of what is already proving one of the most profitable innovations introduced by this corporation—the Union Gas & Electric Company—in many years:

"Owing to your absence we were unable to read your gas or electric meter. Will you co-operate with us to the extent of making the reading and mailing this card at your convenience? Mark as many circles below as meter has dials, beginning with dial on right side and marking from center to edge of circle, just as dial hands appear on meter.

"(Signed) THE UNION GAS & ELECTRIC CO.

"Date....."

A Review of the Progress of the Oil Shale Industry in 1920

(*Continued from page* 71.)

expected to be in operation by February 1. No effort will be made to produce by-products. A skimming plant only will be erected. Mr. Hartman estimates that with a plant of 5,000 tons daily capacity, which he contemplates, he can mine and retort the shale for 65 cents a barrel and that the marketable product will be twenty gallons of gasoline, three gallons of distillate, and two gallons of coal oil to the ton of shale.

In Nevada the deposit seven miles from Carlin has been traced for a distance of 700 ft. Four veins are exposed, two five feet thick, one ten feet thick, and one thirty feet thick. The dip is 40 deg. An inclined shaft has been sunk on the thirty-foot vein for a distance of seventy-six feet. The Nevada Shale Oil & Fuel Company of Elko, Nev., owns 320 acres of this ground.

At Elko, Nev., the Catlin plant is on a commercially productive basis with a daily output of 100 barrels of crude oil. The mine has been opened by an inclined shaft 400 ft. long, with drifts 100 ft. apart, each approximately 400 ft. long. No apparent change in the character of the shale has been noted. The cost of mining, as nearly as can be estimated now, is $1.25 a ton. The plant is a complete unit with retort, condensers, two 300-barrel stills, sweating, and refrigerating plant. The marketable products are gasoline, distillate, lubricating oil, and paraffin wax. Enough gas is produced from the raw shale in the retort, added to the gas made from the spent shale in a detached gas producer, to supply power needs of the entire plant. Experimental work has been going on for the past four years. Fifteen thousand gallons of crude oil have been produced and 4,500 gal. put through the stills. The product will not be put on the market until a commercial stock has been accumulated. To R. M. Catlin, Franklin Furnace, N. J.,

who alone has financed this undertaking and has done the experimental work, together with W. L. Scheeler, the superintendent, belongs the credit of operating the first commercially productive oil shale plant in the United States.

In Utah the Western Shale Oil Company erected a ten-ton plant of the Galloupe type, was producing regularly, and had contracted with the Apex Refining Company for the delivery of oil. A fire, however, interfered with operations. Four additional units of ten-ton capacity each are under construction and are expected to be completed by Feb. 1. This will be increased to 100 tons by March 1. The company estimates that the total cost of production of oil in this plant will be $1.25 a barrel.

The black Devonian shales in Kentucky more nearly resemble the Scotch shale than any other deposit now known in the United States. The process for their treatment, as worked out at the Detroit Testing Laboratories, for the Devon Oil Shale Products Company, consists of a modified Scotch process. An analysis of the shale gave oil per ton, 22.7 gal.; gas per ton, 4,167 cu. ft.; ammonium sulphate per ton, 97.8 lb.; potash as K_2O per ton of spent shale, 58.8 lb. The company is now erecting a complete plant at Clay City, Ky. The first unit will be of fifty tons daily capacity to be increased to 1,500 tons. The cost of mining and retorting is estimated at $1.04 a ton. At Petersburg, Va., six full-sized retorts of the Wallace type are under construction.

In Colorado activity has been pronounced especially in and about Grand Valley and Debeque. At Grand Valley the Grand Valley Oil & Shale Company is erecting a Stalmann retort and a Wells Refining plant on their property in Starkey Gulch six miles north of town. The company is also erecting a testing and research laboratory in the town of Grand Valley. The Union Oil Company of California and the Midwest Oil Company have both secured extensive acreage. The Schuyler-Doyle interests are erecting a Taff retort in Wheeler gulch. At Debeque the W. P. Hammon interests have acquired approximately 10,000 acres, are engaged in diamond drilling the ground and are planning to erect a plant. The Lackawanna Company is erecting a Randall retort, the Mount Blaine a Brown retort, and the Monarch Company a Ginet retort. The Mount Logan Company is operating a Simplex retort. In Rio Blanco County the Continental Oil Company has a fifty-ton plant ready for operation in the spring. In Denver L. F. Chew, of the National Oil Shale Company, has erected a commercial sized vertical retort and is doing experimental work on both retorting and refining. J. McD. Johns, of the Industrial Process Company, of St. Louis, has put up a full-sized inclined retort, the peculiar feature of which is that the shale is reduced to a very fine size; a part of this powdered shale is used as fuel to heat the retort and the rest is put through the retort and yields gas and oil.

Cost of Oil Shale Land

The cost of oil shade land in Kentucky, during the past year, has increased from $25 to $112.50 an acre. In Nevada and California large tracts of undeveloped ground have been secured at a few dollars an acre. In Colorado and Utah the value of shale land varies greatly, according to location and natural advantages. It is fairly safe to say, from general observation and some known sales, that during the past year the selling price has on an average increased 100 per cent.

Research and Experimental Work

It would be impossible, within the limits of this paper, to describe in detail the experimental and research work of the past year, even if it were worth while. The amount of work being done is so great and the number of investigators so numerous, scattered, and interested only in their own special problems, that the task of collecting, co-ordinating, and analyzing the individual results is virtually impossible. The problem remains the same, however; first, to perfect a retort of large capacity, fool proof in its operation, constructed on correct scientific principles, that will produce the maximum amount of good oil; second, to refine crude shale oil, not into a long list of hypothetical by-products; but into a few products for which there is a ready market; and, third, to co-ordinate the various processes so that the marketable products can be sold at a profit.

As usual, Governmental and State research work lags behind private enterprise. Private interests are now employing their own chemists and technical men to make their investigations. The U. S. Bureau of Mines is doing creditable work as far as its resources will allow. At the Colorado School of Mines resources are limited, but the interest is so keen that individual efforts by Professors Low, Roberts and Franks of the Chemistry Department, and Messrs. Keeney and Williams of the Metallurgical Research Department, have resulted in scientific information and technical publications of permanent value to the industry. This has been carried to such an extent that even with its scant financial resources the Colorado School of Mines has attained an international reputation as a center of oil shale research and information.

General Observations

A retrospect of 1920 shows an interest in the oil shale industry exceedingly gratifying to those pioneers of the industry whose interest was first awakened by bulletins of the U. S. G. Survey in 1913 and 1914. A spirit of pessimism—the result of ignorance or ulterior motives—has been succeeded by a spirit of optimism. The organization of the oil shale section of the American Mining Congress has given formal recognition to the industry. The program of the Independent Oil Men's Association at Denver recognized the industry and many oil shale exhibits were installed. At the meeting of the American Mining Congress in Denver the oil shale convention, the working oil shale laboratory exhibit of the Colorado School of Mines, and the comprehensive exhibit of the Petroleum Engineering Company of Kansas City were notable features. A well attended popular excursion from Denver to Debeque and a trip over the oil shale deposits, in connection with the oil convention, was the occasion of wide publicity. The publication of articles by the Wall Street *Journal*, the New York *Tribune*, the *Railroad Red Book*, the *Saturday Evening Post*, and the *Literary Digest* have called the attention of the layman to the subject. A great variety of articles in the scientific, technical, and oil press have reached a special class of readers. To this should be added the publications of the U. S. G. Survey, the U. S. Bureau of Mines and the Colorado School of Mines: also the first American book on "The Oil Shale Industry" by the present writer. All in all, this increased interest, however, is not confined to this country: it is worldwide and especially noticeable in New Brunswick, Nova Scotia, England, Norway,

Sweden, Esthonia, France, Spain, Italy, Brazil, Tasmania, Australia and Chile.

Close observers have known of the possibilities of oil shale for years but not till the past year have the laymen, the investor, the oil men, the mining men and the large financial interests become awakened to the full import of the subject and its great possibilities. The action of such strong financial organizations as the Union Oil Company of California, the Pure Oil Company, the Ohio Cities Gas Company, the Carter Oil Company, the Standard Oil Company, the Midwest Oil Company, and the W. P. Hammon organization, in the United States, the Anglo-American and Anglo-Persian Oil Companies of London, and the Var Coal & Oil Company of France, in acquiring land and investigating the method of treatment of oil shales points unerringly to the early establishment of the industry on a commercially productive basis, so that the United States need have no apprehension whatever about its domestic supply of crude oil, virtually for all time.

Utilities Must Be Frank with Public, Indiana Association Is Told

(*Continued from page 75.*)

difficult if the utility men of Indiana heed the timely advice given them by national directors of public service corporations who addressed the first joint session in Indianapolis of the various utility companies operating in this State. First put your house in order and then tell the public the facts, was a sage bit of counsel from Philip H. Gadsden of Philadelphia, one of the leading utility men of the country, in urging closer co-operation between the utility and the community it serves.

"Emphasis was laid upon the need for courtesy in the relation between a utility's employees and the consumer. The great majority of citizens naturally have little direct contact with the officials of a gas, electric or transportation company. In many cases the consumer's estimate of the corporation is determined by the opinion he forms of the man who reads the meter or his judgment of the car company is based upon the courtesy of the motorman or conductor. The utilities often underestimate the value of good-will established through public confidence in the integrity and fairness of their officials. No matter how urgent the need for new capital or higher rates, the community which dislikes the president or secretary of a utility often will oppose relief measures largely through distrust of the motive underlying the request.

"The people on the other hand, must realize that civic progress is dependent upon co-operation with the public utilities and that if rates are not sufficient to insure a fair return on the value of a plant that the public will soon be affected through a deterioration in service. The public service commission of Indiana has been subjected to some criticism because it has granted rate increases necessary to maintain the solvency of the State's utilities and this antagonism has even reached the point where misguided politicians have sought to abolish that body. It is not difficult to imagine the storm that would be evoked, however, if the utilities were forced into bankruptcy and necessary service discontinued.

"A large percentage of the public has a wrong conception of the duty which the Public Service Commission owes the people of Indiana. They have felt that its sole duty lies in the prevention of any increase in rates and that, if possible, it should compel reductions in the cost of supplying heat, light and other commodities. This regulatory body, however, has had the courage to grant public utilities a rate sufficient for them to continue to function. As pointed out by several speakers at the utility meeting, the public service corporation does not enjoy the profits which accrue to unregulated industries, but only seeks a fair return on the value of its property with the addition of a sufficient margin to attract the investing public when capital is needed.

"It is an undisputed fact that the average increase in rates granted to public utilities since the beginning of the war period has proved substantially less than the average advance in the price of the necessary commodities of life. During the war profiteering became common practice and many industries enjoyed a period of unprecedented prosperity in which their profits ranged from 25 to 100 per cent. In this same period, when coal and labor prices soared and materials advanced in like proportion, the utilities struggled along in an effort to earn 6 per cent on the valuation of their property."

The Status of Utilities

The Indianapolis *News*, commenting on "The Status of Utilities," declared that "it is evident from the speeches made before the first annual meeting of the Indiana Public Utility Association that the directors of public utilities in Indiana have resigned themselves to the numerous restraints imposed upon them by law, and have decided that the day when a utility was a free agent, able to adjust its own affairs to conform to their idea of general economic conditions, has passed. Regulation as a policy appears to be firmly established in practically every State in the country, and nowhere is there a tendency to discard it in favor of the old policy."

The editorial continued:

"Under this new policy the patrons of utilities have to a large extent assumed responsibility for the well-being of public utilities. Through public service commissions the people make decisions which involve the existence of utilities. It is to be wondered whether the responsibilities of the patrons under the present system are as generally known as they should be. Some utilities have surrendered to the new order with ill grace. Some are not candid in their dealings with the people. Some are still striving to overcome bad reputations acquired during the era of stock watering, bribery and deception. Hence there is some excuse for a residium of general suspicion and ill feeling. But the business of almost every utility is now an open book, and the people who condemn it without a knowledge of its affairs are as much a public menace as the crooked utility of another day.

"Commissioner Paul P. Haynes told the association that the utilities of Indiana need $100,000,000 to become efficient public servants. Under the present system of regulation, the utilities can never get even a small part of this sum out of profits. They must get it by selling stocks and bonds that will yield a fair return and they can guarantee a fair return upon investments only when the people, acting through their public willingness to pay for efficient service."

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company	Issue	Maturity	—Market— Jan. 20, 1921 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	88	89½
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	74	74¾
Columbia Gas & Elec. Co.	First 5s	Jan. 1, 1927	85	87
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	97¾	98½
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb. 14, 1935	75	76
Consol. Gas Co. of New York	Sec. Conv. 7s	Feb. 1, 1925	101½	102
Consol. Gas Co. of New York	One Year Sec. 8s	Dec. 1, 1921	100	100¼
New Amsterdam Gas Co.	First Consol. 5s	Jan. 1, 1948	64	66
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May 1, 1949	81	84
Detroit City Gas Co.	Gold 5s	Jan. 1, 1923	93½	95
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	92	95
Hudson County Gas Co.	First 5s	Nov. 1, 1949	74	76
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	70⅝	72
Louisville Gas & Elec. Co.	First & Ref. 7s	June 1, 1923	93½	95½
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	70	72
Milwaukee Gas Light Co.	First 4s	May 1, 1927	80¾	82¼
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	77½	78½
Pacific Gas & Elec. Co.	Col. Tr. Conv. 7s	May 1, 1925	96½	97½
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	98	99
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	83¼	84
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	66	67
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	72	74⅞
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	74	77
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	64	68
Southern California Gas Co.	First 6s	Nov. 1, 1950	84½	86
United Gas Improvement Co.	Two Year 8s	Feb. 1, 1923	99¾	100
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	72	75
Washington Gas Light Co.	General 5s	Nov. 1, 1960	72½	73½
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	75	78

Dallas Gas Earnings Increase

Dallas, Texas.—After paying $121,306 for gas and $23,055 for other operating expenses, the Dallas Gas Company earned during the month of November $37,852, which amount is sufficient to pay the authorized return on the investment, with a surplus for depreciation, according to a report completed by F. B. Sims, chief accountant for the Supervisor of Public Utilities. A considerable deficit accrued during the month of November last year.

Domestic sales during November amounted to $139,171, according to the report; industrial sales amounted to $4,379 and boiler sales $38,533, making the total gross earnings for the month $182,214. The total operating expense, including the amount spent for gas, was $144,361, leaving the net balance of $37,852.

Industrial and boiler sales amounted to 30 per cent of the total consumption of gas in the city during the month. They were discontinued Dec. 8, and the company will derive but little revenue from that source during the remaining winter months.

The report shows that the average delivery of gas to domestic customers during November was 8,091 ft., making the average domestic bill for the month amount to $5.21 gross per meter, of which amount $3.47 was paid to the Lone Star Gas Company. The average cost for other meters was 86 cents.

According to Mr. Sims, estimated earnings for December and January will offset the deficit of $26,189 in the authorized return accruing during the period from Feb. 1, 1918, to Nov. 30, 1920, while it is believed that the February, March and April operations will create a surplus sufficient to tide the company through the summer months.

Gas Co. Makes Up a $10,000 Loss in One Month

Grand Rapids, Mich.—The Grand Rapids Gas Light Company during November made up approximately $10,000 of its losses incurred since last May 1, the operating statement of the company for November, submitted to City Manager Fred H. Locke, indicates. The gross income during the month was 32,539.12.

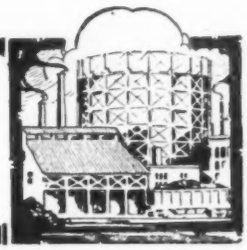
Statistics in possession of Service Director G. J. Wagner show that since May 1 the company has earned $110,373.28 to apply on the company's earnings on its property. During this time the company should have earned $154,000, and is now short $43,627 of having earned 7 per cent on the city's valuation of the property since May 1.

About $8,000 was made up during October, and with the $1.50 rate remaining effective during December and January the company should be able to about balance off this shortage, the city service director believes.

$102,113 Surplus for Twelve Months

Fall River, Mass.—The surplus earnings after charges for November by the Fall River Gas Works Company were $22,202. Gross revenue for twelve months ended Nov. 30 were $894,450.

NEWS OF THE GAS INDUSTRY



Boston Consolidated Granted $1.40 Rate

Boston, Mass.—The Department of Public Utilities has just authorized the Boston Consolidated Gas Company to raise the standard price of gas from $1.35 to $1.40 per thousand cubic feet. This is the third increase allowed the company within a year. The original petition asked for a new price of $1.50.

The city's expert examined the claim that with present rates the guaranteed dividend of 7 per cent could not be assured if depreciation was to be accounted for, and decided that a 5-cent increase was justified.

Portland Gas & Coke Issues Good-Will Calendar

A most attractive and useful good-will calendar, entitled "How to Use Gas Economically," has just been issued by the Portland (Ore.) Gas & Coke Company. Complete directions for reading meters are accompanied by three small dials showing one, ten and one hundred thousand feet of gas respectively. A few don'ts to housewives follow, such as: "Don't keep a full flame under water which has reached the boiling point"; "Don't leave a burner on full force while not in use at the time. Turn it down"; "Don't light burner and then go and fetch things, but do just the opposite"; "Don't burn the flame high enough to extend outside of the vessel," and several more equally as pertinent. The company has recently used these same "Don'ts" in a series of newspaper ads, which have met with great success.

Gas Franchise Granted

Warren, Ark.—The City Council has granted a gas franchise to E. L. Wise and associates. The franchise holds good for twenty years, and it is to continue after the installation of gas lines. Mr. Wise is manager of the Warren Cotton Oil & Manufacturing Company, which owns an oil and gas plant at El Dorado. Mr. Wise proposes to pipe gas from Union County if it develops that there is a field there.

Litchfield Gas Rate Fixed at $2.10

Litchfield, Ill.—An order entered by the State Utilities Commission last week fixed the new price of gas at Litchfield at $2.10 a thousand cubic feet, and the Southern Illinois Light & Power Company was given orders to make surveys as to pressure and meter tests. The commission permanently suspended the proposed schedule of rates filed by the company and the new rate is to become effective from Jan. 1.

Withdraws Increased Rate Petition

Boston, Mass.—The West Boston Gas Company has withdrawn its petition for increasing the rate in Framingham and Natick by 30 cents for each 1,000 cu. ft. At a recent hearing opponents of the increase brought out that through carelessness of the company a large quantity of gas had escaped, and later investigation by a State inspector disclosed a broken valve in the meter at the receiving station in Marlboro. The company decided to install a new meter and withdraw the petition.

Springfield G. & E. to Suspend Operations

Springfield, Ill.—Alleging unbearable conditions imposed by the City Council the Springfield Gas & Electric Company has served notice on its patrons that service will be discontinued after March 10.

Efforts of the Springfield commissioners to assume control of the company thus far have proved unsuccessful.

Warning by Bureau of Mines Against Use of Army Gas Masks

Washington, D. C.—Implicit faith in an instrument that saved the lives of thousands of American soldiers in France is daily endangering the lives of scores of men in industrial life in the United States, Dr. F. G Cottrell, director of the Bureau of Mines states, in another warning against the use of army gas masks in mine explosions and mine fires Despite repeated warning from the department, miners and persons engaged in mine rescue work persist in using army gas masks, although the devices are of practically no use in the average mine disaster.

Reviewing a number of cases recently where men attempting mine rescue work with army type gas masks had been overcome and had died, Dr. Cottrell says:

"These fatalities illustrate the futility of the belief quite prevalent throughout the country that this army type of gas mask will protect the wearer against any type of gases under all conditions. The fact is that the army gas mask was a very excellent device for the purpose intended, that of protecting our soldiers from the diabolical gases used in warfare. The mask gave the men such absolute protection that when they returned from France they were so enthusiastic over its performance they were willing to endorse the gas masks for all purposes of protection against poisonous gases. These men, it would seem, do not realize that out in the open air of the battlefield the percentage of gas in the air would not be nearly so large as in the confined spaces of a mine or factory fire."

Engineers Are Successful in Reducing Leakage

Bartlesville, Okla.—A noticeable reduction of the leakage in gas pipelines and in the distributing systems of eleven cities and towns of Kansas, Missouri and Oklahoma has been effected in nine months by a corps of engineers, working under the direction of H. D. Hancock of the gas division of the Empire Companies. In some cases the reduction has been 75 per cent in nine months.

In the past a large proportion of the gas delivered into the pipelines from the wells has been lost by leakage. While some of the loss may be attributed to leaks in the pipeline systems, the greater part of it has been shown to be in the distributing lines and in the house piping of domestic customers. That is apart and distinct from waste of gas in the home, store, office or factory, due to faulty, improperly adjusted appliances which the Natural Gas Conservation Committee for the State of Kansas has sought mainly to reduce. While the State conservation demonstration corps has gone from town to town in an appeal to housewives for better methods, engineers of the Empire Companies have attacked the problem of reducing leakage losses.

"Natural gas is the aristocrat of fuels," Judge Clyde Reed of the Kansas Court of Industrial Relations says. "It is the cleanest, most convenient and most desirable of all of them. The natural gas supplies of the State are one of its greatest assets. They must be conserved."

Conservation of natural gas affects not only those who use the fuel, but the entire population, since the number who are now using natural gas would become competitors for the supply of coal if gas should fail. Thus the conservation of fuel is one which has attracted the serious consideration of the entire nation.

Gas leakage work has been conducted in Topeka, Winfield, Arkansas City, Cambridge, Rose Hill, Oxford and New Salem, in Kansas; Carthage, Carterville and Webb City in Missouri; and Bartlesville, Okla. The most notable reduction in leakage has been in Cambridge, Oxford and New Salem, where the leakage has been reduced below the specifications of the Kansas Court of Industrial Relations, 200,000 cu. ft. a year per mile of 3-in. main. In those towns the leakage at present is not over 170,000 cu. ft. a year. Prior to the surveys and repairs it was more than 1,000,000 cu. ft. a year. Winfield has been reduced 75 per cent, and in the other cities the record has been almost as good.

Second Largest Gas Holder Under Construction

Baltimore, Md.—The largest construction job now in progress in Baltimore is not an "industrial plant" in a factory sense. It is simply the container of part of the product of one big Baltimore factory, or rather one section of the factory—namely, the gas factory—and the construction job is the enormous gas holder, the second largest in the world. The site of this work is at Spring Gardens. The great tank when completed will have a capacity of 10,000,000 cu. ft. of gas.

Some idea of the size of this structure can be obtained from the statement that in point of cubic contents it will be big enough to contain seven of the largest buildings in Baltimore. When fully inflated the holder will be 228 ft. high.

There is but one gas holder in the world that is larger than this. It is located in New York. The work of construction is under the direction of George Beadenkopf and the contract was awarded to the Benjamin F. Bennett Building Company. Fifteen thousand cubic yards of earth are being removed to permit the placing of a concrete foundation. The circular base of concrete will be 279 ft. in diameter and 18 in. thick from the center to the 12-ft. wide rim, where it becomes 24 in. thick. It will require about 4,000 yards of concrete.

The foundation is expected to be finished in March, when will be begun the erection of the steel by the Bartlett-Hayward Company, which expects to use from 100 to 125 men in its construction. The purpose is to have it completed by Oct. 1.

The holder itself will float in a tank which will have a capacity of 16,500,000 gal. of water, the tank being 273 ft. inside diameter and 38 ft. deep. The holder will be composed of five sections of steel and will require 7,750,000 lb. of steel.

Large as the capacity of this holder is, its contents will be about one-third of the daily output of gas in Baltimore.

Helium Gas Plant Nearing Completion

Fort Worth, Texas.—Finishing touches are being put on the Federal Government's $5,000,000 helium gas plant six miles north of Fort Worth, and operations on a large scale are expected to begin soon.

This announcement is made by Lieutenant Griffin, who is in charge as the representative of the Navy Department. The last of the machinery was shipped to Fort Worth before the first of the year.

Established in 1917 at a cost of $800,000, the plant has been an experiment station thus far. But the worth of the gas and its economy for use by the navy and army balloons have been proved to the satisfaction of military experts.

In addition to the plant near Fort Worth, the Government also has constructed a private pipe line from Petrolia which brings natural gas from the Lone Star Company's wells right into the plant. After the argon qualities, from which helium is obtained, have been extracted, the gas is returned to the mains and burned by Fort Worth and other consumers in northern Texas.

The argon or helium plant was erected in great secrecy, a guard of soldiers being constantly maintained around it until after the armistice. During war days, admission was denied to the public and only picked workmen were employed.

The experiment at the station had been so successful before the armistice that it was predicted the use of the argon gas would speedily terminate the conflict. However, no opportunity was ever given of testing it out in battle.

The gas is non-inflammable and non-combustible. Its value was discovered before the war but the process of extracting it was then too costly to make the gas practical.

The gas is shipped from Fort Worth to Galveston and New Orleans in cylinders and loaded there aboard Navy Department vessels for transportation to balloon fields.

Employees Buy Stock

Worcester, Mass.—Over 75 per cent of the employees of the Worcester Gas Light Company have taken stock in a new issue just put out. This is the first time that the employees have been given an opportunity of subscribing to the company's stock, which is to pay 8 per cent.

Humphrey Salesmen Hold Annual Conference

The Humphrey Company, Kalamazoo, Mich., held its annual sales conference Jan. 4 to 6 in Kalamazoo. Humphrey representatives from all over the United States gathered together for the three-day session. The program was as follows:

Tuesday, Jan. 4

10.30 a. m.—Showing of complete line; discussion of different types of heaters, construction and handling.

1.30 p. m.—Frank Stockdale spoke on "Retailers and Retailing," followed by discussion on "Selling to Gas Company": (a) Possibilities for 1921 for gas company business; (b) what interests the gas company; (c) quality goods; (d) fair prices; (e) low maintenance; (f) advertising plans; (g) campaigns; (h) selling prices; (i) dealer and plumber co-operation; (j) gas company salesman's education.

Wednesday, Jan. 5

9.30 a. m.—"Selling the Plumber, the Agent and the Jobber." General discussion. Talk by W. B. Henri, of Henri, Hurst & McDonald, Chicago, Ill.

Thursday, Jan. 6

9.00 a. m.—"Service Advertising" and discussion on various points.

1.30 p. m.—Address by W. J. Woolley, manager of Trade Extension Bureau of the National Master Plumbers' Association.

New Company Is Formed to Handle Appliances

Hazleton, Pa.—Announncement has been made by the Luzerne County Gas & Electric Company that during January, 1921, the appliance business will be divorced from the utility. The Interstate Appliance Corporation will thereafter conduct that end of the business and Andrew J. Leib, who has been affiliated with the Luzerne County Gas & Electric Company for some time past, will become the Hazleton manager of the new appliance corporation.

Reasons for the change are based on the need for specialized service. The utility business proper has reached a point demanding the undivided attention of those in authority, and therefore, for the best interest of the company and its consumers, the merchandising activities will be undertaken by others. The utility is entirely confident that appliance service will be furnished by the Interstate Appliance Corporation to the full satisfaction of the community, as the goods to be handled are produced by manufacturers who authorize their distributers to stand back of every sale. The people here are certain to have available gas and electric labor-saving devices which will be practical, economical and reliable.

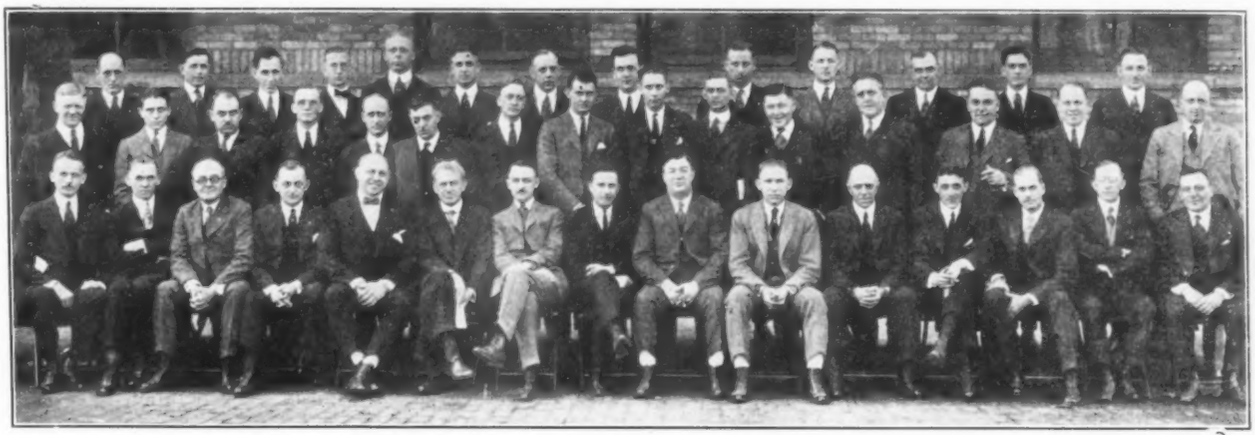
Hazleton people serious enough to consider the change from any phase are content with the announcement that Mr. Leib is to be retained as the local representative for the new corporation. During his appliance sales work in Hazleton he has created much warm feeling with his customers, and his continued presence here will undoubtedly be a boost for the Interstate Appliance Corporation.

Portland Gas & Coke Exhibits Gas Products

Portland, Ore.—The Portland Gas & Coke Company recently had on display at its offices a number of Portland products, all manufactured with the aid of gas heaters, furnaces and firing devices. The products ranged from enameled automobile fenders to daintily prepared pastry and leather gauntlets.

Enameled parts of an automobile, baked and made durable through the use of a specially-made gas oven, were on view, being the output of the plant of G. G. Gerber. Another interesting feature of the display was the exhibit of the Pacific Brass & Steel Foundry Company, whose gas furnaces are required to give heat as high as 3,100 degrees.

Besides these displays the exhibit was composed of products by many other manufacturers, among them being bread, pastry, candy, gloves, hats, coffee, roasted and prepared in gas ovens; extracts, flavors, tools, valve grinders, license plates, badges, saws, automobile fenders and radiators, washing machines, ice cream cones, women's headgear, steel axes and other articles, all of them having been made by gas-using concerns.



A GROUP OF HUMPHREY SALESMEN AT THEIR ANNUAL MEETING AT KALAMAZOO, JAN. 4 TO 6

Massachusetts G. & E. Association Files Gas Measures

Boston, Mass.—Petitions have been filed with the Senate clerk by the Massachusetts Gas and Electric Association for four different bills, as follows: That gas and electric companies may sell their bonds at such prices and bearing such rate of interest as the Department of Public Utilities may deem reasonable and necessary, subject to such restrictions as that department may impose; to authorize the issue of capital stock by such companies of par value equal to the amount paid in therefor to the corporation issuing the same: to enable gas and electric companies to call in and cancel their existing capital stock having nominal or par value and to issue in place thereof and in exchange for the same stock without nominal or par value, and thereafter, in all cases of increase of capital stock, to issue stock without nominal or par value; to enable gas and electric companies to issue capital stock at less than its par value in certain cases and under certain conditions, namely: that the stock cannot be disposed of at par value or above.

Rate Raise Suspended

The Arkansas Corporation Commission has suspended proposed rate increases of the Arkansas Natural Gas Company pending a hearing, which was set for February 28. The rate schedules were filed in December, and were to have become effective on dates extending from Feb. 7 to May.

No petitions have been filed by the Little Rock Gas & Fuel Company, the distributing company at Hot Springs. In Little Rock and Hot Springs the Arkansas Natural Gas Company is not a retailing concern, but in other towns it serves it sells gas direct to the consumers.

The petitions filed by the gas company fixed schedules of rates to consumers as well as schedules for the two distributing companies. The prices it proposes to charge the distributing companies would force the latter companies to boost their retail rates to the levels fixed by the Arkansas Natural Gas Company for its retail patrons in other towns. The rates would be as high as 67½ cents per 1,000 cu. ft. for domestic consumers.

The Hot Springs company, it is said, is planning to align itself with the consumers to fight the proposals of the Arkansas Natural company. What attitude the Little Rock company will take is not known.

Dayton Guaranteed Supply of Gas

Dayton, Ohio.—Effective Feb. 12, or as soon thereafter as the Dayton Gas Company can guarantee this city an "adequate supply" of natural gas, the rate here to consumers will be 50 cents a thousand for the first 5,000 ft., 55 cents for the second 5,000, 60 cents for the next 10,000 and $1 a thousand for all over 20,000 between November and April.

This rate, together with a new ordinance fixing the minimum pressure at two ounces and fixing a penalty upon the gas company if it drops below one ounce for more than 72 hours, is provided in two ordinances passed by the city commission.

Dayton's gas is supplied the distributing company by the Logan Natural Gas & Fuel Company.

Free Gas for Two Months

Cleveland, Ohio.—The East Ohio Gas Company will furnish free gas to Cleveland in March and April rather than shut off the supply Feb. 6 because of a rate controversy now going on with the city, according to company officials.

M. B. Daly, president of the East Ohio, said service would not be discontinued at the expiration of the present rate contract, but he pointed out that his company's pipes would have no right in the city streets after February 6, the date the present franchise expires.

Gas Firm Incorporated

Baltimore, Md.—The United Gas & Electric Engineering Company has been incorporated.

The capital stock is to be $100,000 and, according to the incorporation papers filed with the State Tax Commission, Philip Broun, Solomon Berkowich and Jessie Fine, all of Baltimore City, are to be directors. The principal office of the company is to be located at 700 West Baltimore Street.

PEOPLES GAS LIGHT & COKE COMPANY of Chicago reports a decrease of 17 per cent in "disability accidents" for the year 1920 as compared with 1919, notwithstanding an increase of 5 per cent in the man hours or time worked during this period.

Rates Raised; Service Charge Abolished

Reading, Pa.—Official announcement of a reduction in service charge and an increase in the cost of gas consumed has been made by the Consumers Gas Company. The new rates show that the gross cost of gas for all purposes from Jan. 1, 1921, will be $1.25 per 1,000 cu. ft. On each bill sent to consumers the company stamps a date until the expiration of which a discount of 10 cents per 1,000 cu. ft. will be allowed. The person who pays his bill promptly will save the extra 10 cents and pay what is termed a net cost per 1,000 cu. ft. of $1.15. The discount will be allowed those sending their checks by mail for the payment of the bill if the cancellation mark on the envelope shows that it was mailed before the date of expiration of the discount privilege.

The new rates announced by the company show a decrease of 25 cents per month for service charge. For meters of small capacity, the type used in a majority of homes in Reading, the charge is reduced from 75 to 50 cents per month. The next class meters pay 75 cents per month service charge instead of $1, a third group pays a service charge of $1 instead of $1.25, and the final size, the largest type installed, pays a service charge of $1.25. No discounts are allowed on service charges.

To Hold Annual Meetings

Boston, Mass.—Stone & Webster announce the annual meetings of the Blackstone Valley Gas & Electric and the Columbus Electric companies, which will be held on Feb. 8 and Feb. 1 respectively. The transfer books of the former will be closed from Jan. 28 to Feb. 8 inclusive and those of the latter from Jan. 20 to Feb. 1 inclusive.

New Gas Rate Effective

The new rate of 80 cents per thousand cubic feet of gas, recently granted the Pavilion Natural Gas Company, Buffalo, N. Y., by the Public Service Commission, became effective Jan. 3 and the February bills will have to be paid at that rate. The five days' notice of the new rate has been served upon the village trustees. The bills for December payable this month are made out under the old rate.

Increased Rates Under New Franchise Now Effective

Covington, Ohio.—Under the new five-year franchise granted by the city commissioners recently to the Union Light, Heat & Power Company, fifteen thousand consumers of natural gas in Covington have begun to pay an increase of from 50 to 100 per cent in their monthly gas bills.

The old franchise, sold by the city twenty years ago, expired Jan. 9. The sale of that franchise was a memorable event in the history of Covington. The Covington Gas Company of Covington and the Detweiler Company of Toledo, Ohio, were the opposing bidders for the franchise.

Members of the boards of council and aldermen wrangled for several months and the fight was kept up until the last evening and last hour in which the franchise could be legally sold. Under the rules the regular session of council closed at a certain hour.

When that hour arrived the board adjourned, and immediately afterward the local interests, having gained a majority, council was reconvened and the clock in the council chamber turned back so as to give the proceedings the appearance of legality under the rules, and the franchise was awarded to the local company.

Later the franchise was sold to the Union Gas & Electric Company, which was succeeded by the Union Light, Heat & Power Company. Under the old Covington Gas Company artificial gas was increased in price from 65 cents to $1 per 1,000 cu. ft., resulting in a decrease in the consumption of gas. Later the Union Light Heat & Power company obtained natural gas from West Virginia and reduced the price to 30 cents per 1,000 cu. ft., resulting in a large increase in consumption of gas.

The company entered into a contract with the city of Covington to furnish the citizens with gas at 30 cents so long as gas was to be furnished Cincinnati through the Covington mains. The recent franchise was given to the company at its own figures under threat of cutting off the supply and piping gas to Cincinnati through Campbell County. The company also refused a longer term franchise than five years.

The new rates will be 45 cents to consumers using 5,000 ft. or less monthly; those using an additional 5,000 ft. must pay 50 cents, and an additional 5,000 ft. to that figure will cost 55 cents. All consumers using more than 15,000 ft. must pay 60 cents, which is an increase of 100 per cent over the old price. The company pleads the scarcity of gas as a reason for placing a premium on its consumption.

Gas Workers Plan a Merry Party

Lynn, Mass.—Pretty costumes for girls, up-to-the-minute rapid-fire jokes, and catchy songs will be features of the Lynn Gas & Electric Company employees' minstrels and dance to be held in the women's clubhouse, Feb. 7 and 8. Palms, ferns and other plants will be conspicuous in the decorations. Also the end men's costumes will be noteworthy.

In addition to giving a two hours' entertainment chock full of mirth, melody and joy, the committee has prepared an extra act in the form of a patriotic tableau, which will consist of the Goddess of Liberty, the Red Cross nurse and the little doughnut girl. On either side of three girls will be two of Uncle Sam's defenders, one in khaki of the United States Army and the other representing America's navy.

John Curtin, president of the employees' association will be master of ceremonies.

Ontario Appeals for Lower Gas Rates

Ingersoll, Ont.—Municipalities in this section of Ontario which are dependent to a certain extent on the natural gas fields for fuel have appealed to the Ontario Minister of Mines against the increase in rates from 45 cents to 85 cents per 1,000 cu. ft. Instead of advising the municipalities not to pay any increase at all, as it was hoped he would do, the minister has proposed that negotiations be entered into to arrive at an interim rate which the municipalities would pay until a commission appointed by the Government has made a thorough investigation of production and distributing costs.

Several towns and townships have made a tentative rate with the gas companies, the price varying from 50 to 70 cents per 1,000 cu. ft. Some hardship is being experienced as a result of the determination of the Government to enforce gas regulations which prohibit the use of gas for heating in schools and churches.

Higher Rates Allowed After Four-Year Fight

Springfield, Ill.—Authority to increase its gas rates in Waukegan and the other cities in Lake County served by it has been granted the North Shore Gas Company of Waukegan by the State Public Utilities Commission. The company asked for a 30 cent increase from the present rates on all graduations, but the commission allowed it but 20 cents increase.

Following are the new rates which are effective as of date of Jan. 1, 1921:

300 ft. or less per month—50 cents.

5,000 ft. per month—$1.60 per M.

Next 5,000 ft.—$1.55 per M.

Next 10,000 ft.—$1.50 per M.

Next 10,000 ft.—$1.45 per M.

Over 30,000 ft.—$1.35 per M.

A discount of 10 cents per 1,000 ft. is allowed for payment of gas bill before the tenth of each month.

On Dec. 3, 1920, the utilities issued an order which allowed the local gas company to increase its rate to $1.60 gross for the first 5,000 ft. used, an increase of 20 cents per thousand feet. The same increase applied to all graduations. It was stipulated, however, that the permission was only temporary. The order just issued allows the company to make the temporary rate a permanent one. This ends a four-year fight that has been waged by the gas company for an increase in rates. The net rate for gas before the war was $1 per thousand feet. The net rate under the latest ruling is $1.50 per thousand. This is an increase of 50 per cent.

Rate Increases Sought

The Light, Fuel & Power Company of West Virginia, which operates at Sutton and nearby towns, has applied to the Public Service Commission for authority to increase its gas rates from 32½ cents per 1,000 cu. ft. to 40 cents. The Gassaway Gas Company has similarly taken steps for a rate increase from 31 cents to 40 cents. The Williamson Electric Company also has filed application with the commission for a rate increase of about 1 cent on each kilowatt hour. The hearings have been set for Feb. 8.

Personal Notes

Alfred I. Phillips Joins A.G.A. Staff

It is possible that the gas industry does not realize the extent to which the general service of the American Gas Association has grown. The industrial fuel engineering service is well established, as many companies are aware that have called Mr. Ehlers to their aid. But the growing demand for assistance and information in operating problems and technical matters generally, as well as requests for aid in the preparation of rate cases, revision of service standards, etc., have led to a recent addition to the association's staff in the person of Alfred I. Phillips.

Mr. Phillips is a graduate of the Massachusetts Institute of Technology, of the class of 1910. For a number of years following graduation he was with the operating department of the United Gas Improvement Company, and during the war served in the procurement division of the Army Ordnance Department, where he did toluol work. Later he became connected with the Bureau of Standards, and still more recently he has been with Arthur D. Little, of Boston, Mass., handling the rate case of the Boston Consolidated Gas Company.

Both Mr. Phillips and Mr. Ehlers will spend part of their time in the field in the service of our company members. This is a truly "service at cost," for the association seeks to derive no profit from this activity but only the reimbursement of expense for the service actually rendered.

ELMER S. STACK, formerly president and general manager of the Stack Heater Company of Boston, has joined the Riverside Boiler Works, Inc., as manager of the stack division of that company. Under his management the Riverside Company will manufacture "Riverside-Stack" products. In this way the trade will be given all the latest improvements in domestic hot water engineering. Mr. Stack's name has been for many years a by-word when it comes to heating water by gas, steam, coal or otherwise. "Riverside-Stack" products will be the best that can be produced and will be marked throughout the United States by the trade. Mr. Stack has been a valuable contributor to plumbing and gas papers and is considered an authority in Massachusetts and elsewhere on hot water engineering problems.

S. D. HEED has been appointed general manager of the Union Gas & Electric Company, Cincinnati, Ohio, W. W. Freeman, president of the company, recently announced. Mr. Heed comes from Nitro, W. Va., where he was chairman of the sales control committee on disposition of the nitro explosive plant there. He was a major in the Ordnance Department, U. S. Army, during the war. He served as engineer for New York City for about five years.

THOMAS H. CHAMBERS, of Federalsburg, Md., bank president and prominent citizen of Caroline County, was elected to the directorate of the Eastern Shore Gas & Electric Company at the recent meeting of the board of directors of that company.

For a number of years, Mr. Chambers has been keenly interested in the development of gas and electric power in the Federalsburg district and the advantages to be derived therefrom by the community as a whole.

He was always to be relied upon as a friend in need during the early trials of the Idlewild Electric Light, Heat & Power Company which was promoted and managed by J. C. Disharoon who continued in charge of the local plant until it was acquired by the present owners some five years ago.

In accepting the appointment Mr. Chambers, who is naturally a very busy man, proves again his interest as a public spirited citizen in the further advancement of the gas and electric lighting industry. It is highly desirable for the modern public utility company to have its local customers ably represented on its board of directors and in the selection of Mr. Chambers to represent the Federalsburg district, the Eastern Shore Gas & Electric Company has shown evidence of a sincere desire to mutalize and interests of its consumers with those of the company.

BYRON C. FOWLES, manager of the Pine Bluff properties of the Arkansas Light & Power Company, has been sent to Russellville, Ark., as manager of the local gas plant. C. M. Woolum, former local manager, will go to Pine Bluff. Mr. Fowles was sent to Russellville to become familiar with the business in Russellville and other towns supplied by the Russellville plant with a view to installing a large central power plant at the Southern anthracite mines, where a small test plant was installed last summer, which uses slack coal and waste from the mines as fuel. The experiment so far has come fully up to expectations and the next step to be determined is the size of the plant that will be required to meet the possible needs of the field.

L. H. DOUGHTY, county highway commissioner, whose position will be taken over by one of the county commissioners, has become manager of the Norfolk, Neb., gas plant. Mr. Doughty succeeds Dr. H. J. Cole, who has been manager of the plant for a number of years and who plans a rest from active work. He probably will go to California for a few months.

Mr. Doughty, as civil engineer, will be valuable to the gas plant, because of the work which is planned for the future and which will require the attention of a civil engineer.

The plant has been reconstructed since the recent fire and some important extensions are planned to keep pace with the progress of the city.

R. E. TUNWAL has been appointed superintendent of the Peoples Light Company, Davenport, Iowa, general manager C. N. Chubb has just announced. Mr. Tunwal comes from Fort Dodge. He succeeds O. W. Rector, resigned.

DANIEL R. CHASE, paymaster at the Providence Gas Company, Providence, R. I., and connected with that corporation for more than thirty years, died Jan. 2 at his home in his seventy-ninth year. He had been in failing health for more than two years.

Mr. Chase was born in Dennis, Mass., the son of William M. and Irene (Crowell) Chase. He had lived in this town for more than thirty-five years. He was an active official of the gas company for many years. He leaves his widow and a son, William T. Chase, of Providence.